

AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A ferroelectric thin film formed of crystals in which directions of polarization axes are inconsistent with an applied electric field direction in a crystal system.

2. (Original) A ferroelectric thin film formed of crystals in which directions of 180° domains are inconsistent with an applied electric field direction in a crystal system.

3. (Original) A ferroelectric thin film formed of crystals in which directions of 90° domains are inconsistent with a direction perpendicular to an applied electric field direction in a crystal system.

4. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~claim 1,

wherein the 180° domains are arranged at a constant angle to the applied electric field direction ~~in a ferroelectric thin film plane~~.

5. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~, wherein the 90° domains are arranged at a constant angle to the applied electric field direction ~~in a ferroelectric thin film plane~~.

6. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~claim 1,

wherein the 180° domains reversely rotate in a predetermined electric field with respect to the applied electric field direction ~~in~~ and a ferroelectric thin film plane.

7. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~ claim 1,

wherein the 90° domains reversely rotate in a predetermined electric field with respect to the applied electric field direction ~~in~~ and a ferroelectric thin film plane.

8. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~ claim 1,

wherein polarization is arranged at a constant angle to the applied electric field direction ~~in a ferroelectric thin film plane~~ have the same polarization in the same applied electric field.

9. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~ claim 1, formed of a polycrystal highly oriented in the applied electric field direction in a ferroelectric thin film plane.

10. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~ claim 1,

wherein a polarization axis distribution exhibits no anisotropy with respect to the applied electric field direction in a ferroelectric thin film plane.

11. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~claim 1, using:

a tetragonal $\text{Pb}(\text{Zr},\text{Ti})\text{O}_3$ ferroelectric which is (111)-oriented along the applied electric field direction with respect to a ferroelectric thin film plane.

12. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~claim 1, using:

a rhombohedral $\text{Pb}(\text{Zr},\text{Ti})\text{O}_3$ ferroelectric which is (001)-oriented along the applied electric field direction with respect to a ferroelectric thin film plane.

13. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~claim 1, using:

a bismuth-layer-structured ferroelectric which is (111) or (110)-oriented along the applied electric field direction with respect to a ferroelectric thin film plane.

14. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~claim 1, using:

an $\text{SrBi}_2\text{Ta}_2\text{O}_9$ ferroelectric which is (115), (111), or (110)-oriented along the applied electric field direction with respect to a ferroelectric thin film plane.

15. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~claim 1, using:

a $\text{Bi}_4\text{T}_3\text{O}_{12}$ ferroelectric which is (117), (111), (107), or (317)-oriented along the applied electric field direction with respect to a ferroelectric thin film plane.

16. (Original) The ferroelectric thin film as defined in claim 11, using a (111)-oriented platinum group metal electrode with a full width half maximum of 2° or less.

17. (Original) The ferroelectric thin film as defined in claim 12, using a (001)-oriented platinum group metal electrode with a full width half maximum of 2° or less.

18. (Original) The ferroelectric thin film as defined in claim 13, using a (111)-oriented platinum group metal electrode with a full width half maximum of 2° or less.

19. (Original) The ferroelectric thin film as defined in claim 14, using a (111)-oriented platinum group metal electrode with a full width half maximum of 2° or less.

20. (Original) The ferroelectric thin film as defined in claim 15, using a (111)-oriented platinum group metal electrode with a full width half maximum of 2° or less.

21. (Original) The ferroelectric thin film as defined in claim 13, using a (110)-oriented platinum group metal electrode with a full width half maximum of 2° or less.

22. (Original) The ferroelectric thin film as defined in claim 14, using a (110)-oriented platinum group metal electrode with a full width half maximum of 2° or less.

23. (Original) The ferroelectric thin film as defined in claim 15, using a (110)-oriented platinum group metal electrode with a full width half maximum of 2° or less.

24. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 16 to 23~~claim 16, using an alloy electrode of lead and platinum group metal.

25. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~claim 1, formed by using a mixed solution of a sol-gel solution and an metal organic decomposition solution.

26. (Currently Amended) The ferroelectric thin film as defined in ~~any of claims 1 to 3~~claim 1, comprising silicon, or silicon and germanium in elements of ferroelectric.

27. (Currently Amended) A method of manufacturing the ferroelectric thin film as defined in ~~any of claims 1 to 26~~claim 1, comprising:
performing crystallization by rapid heating in an oxidizing gas atmosphere at a pressure less than 10 atmospheres.

28. (Currently Amended) A ferroelectric memory device using the ferroelectric thin film as defined in ~~any of claims 1 to 26~~claim 1.

29. (Currently Amended) A ferroelectric piezoelectric device using the ferroelectric thin film as defined in ~~any of claims 1 to 26~~claim 1.